in order that their destination may be the better traced. Further, the traffic in the finished mixture has been somewhat checked by a number of prosecutions, undertaken by Government in the case of imported products, and by a few local authorities in cases where the "blended" butter was sold in this country. But to kill the snake instead of merely scotching it additional weapons are required. Useful measures for this purpose would be: (1) To adopt a recommendation made by a departmental committee some years ago, that a minimal limit for volatile acids should be fixed, below which a presumption should be raised that the butter is not genuine; this would strengthen the hands of the public analyst, and though it would not altogether stop the adulteration, it would restrict its amount and diminish the profits accruing therefrom. (2) To enact that no substance shall be sold as butter if it contains less than 80 per cent. of butter fat; this would prevent the "loading" of butter with curd or "solidified milk." (3) To organise a system of strict inspection of butter factories. (4) To give the Commissioners of Customs greater powers for regulating the admission into this country of adulterated butter and of substances which may be used in the adulteration of butter. (5) Most effective of all would be for the Government of each butter-exporting country to adopt some system modelled on the Netherlands "control" plan of combined inspection and analysis, and to furnish an official voucher of purity, without which the butter would either not be admitted here at all, or only under special conditions of marking. For this, however, we shall have to wait. C. SIMMONDS.

A REMARKABLE DISCOVERY IN EGYPT.

ON February 7 a most important discovery was made by Prof. Naville at Thebes. The excavation of the eleventh dynasty temple at Deir el-Bahari, discovered by Prof. Naville and Mr. H. R. Hall, of the British Museum, in 1903, has since been carried on for the Egypt Exploration Fund by these gentlemen, assisted by Mr. E. R. Ayrton. Mr. Ayrton being unable to continue working for the Fund this year, his place was taken by another of the Fund's excavators, Mr. C. T. Currelly, who joined the expedition for the first time this year. During this season work was first carried on by Messrs. Hall and Currelly in the southern court of the temple. Here were discovered some interesting priests' houses (?) of brick, dating from the time of the twelfth to eighteenth dynasties, and the south temenos-wall of the temple. This wall was found to be of the same type as the south wall of the great temple of Queen Hatshepsu, which was thus shown to be in reality the north temenos-wall of the eleventh dynasty temple. Later on Mr. Hall began the excavation of the back part of the temple to see how it ended. He discovered, Prof. Naville says, "the enclosure wall and found that the enclosure was interrupted by a court or wide avenue, lined on both sides by a single row of columns, and directed towards the mountain. The rock had been cut open to make way for the avenue."

Later on, when Prof. Naville reached Thebes and Mr. Hall left for England, work was directed to the exploration of the remains of an eighteenth dynasty building, also in the back part of the temple, which had been discovered by Messrs. Hall and Ayrton in 1904. At the end of this building was made Prof. Naville's splendid discovery, described by him in the *Times* recently. It consists of a cell or chapel excavated in the rock, lined with coloured relief sculptures depicting King Thothmes III. making offerings to the god Amen, and in the midst of it was found intact the original cult-image, a great painted and gilded stone cow, of life size. The cow was the emblem of Hathor, goddess of the western desert-hills, who was specially venerated at Deir el-Bahari. The image was dedicated by King Amenhetep II., the son and successor of Thothmes III. The chapel belongs really, not to the eleventh dynasty temple, although placed at the end of it, but to the great temple of Deir el-Bahari, with which it is contemporary. The great interest of the figure of the cow, besides its importance as a work of art, lies in the fact that this is the first time that an Egyptian cult-image has been found intact in its shrine. The whole chapel and image will be re-erected in the Museum of Cairo. Illustrations of the find were published in the *Graphic* and *Daily Graphic* of March 2.

This discovery is the latest proof of the remarkable nature of Prof. Naville's work for the Egypt Exploration Fund at Deir el-Bahari, which is one of the most interesting sites for archæological work in Egypt, and one of the most productive of interesting small antiquities, chiefly votive offerings to Hathor of the time of the eighteenth dynasty. These often are in the shape of little cows of blue glazed faïence, models of the great cult-images in the various cave-shrines of Hathor, of which the newly discovered chapel is one, the chief being the well known Hathor-shrine, with the red painted reliefs, on the platform of the great temple, found by Mariette many years ago.

The work of the Egypt Exploration Fund, which is now being carried on by Prof. Naville and his assistants alone, needs considerably more monetary support than is at present being extended to it. It is to be hoped that this discovery will act as an incentive to those who are really scientifically interested in the progress of archæological knowledge, no matter by what *person* that progress is effected, to give their help to the Egypt Exploration Fund, which discovered Naukratis and the store-city of Pithom, identified the route of the Exodus, excavated Tanis, Bubastis, and Herakleopolis, scientifically explored the tombs of the most ancient kings at Abydos, and is now bringing successfully to an end its most imposing work, the excavation of the two temples of Deir el-Bahari at Thebes.

NOTES.

THE Bakerian lecture of the Royal Society will be delivered by Prof. John Milne, F.R.S., on Thursday next, March 22, on "Recent Advances in Seismology."

PROF. O. HERTWIG, professor of comparative anatomy, University of Berlin, and Prof. H. O. Osborn, professor of zoology, Columbia University, New York, have been elected foreign members of the Linnean Society.

THE annual general meeting of the Chemical Society will be held on Friday, March 30, when the president will deliver his address, entitled "The Living Organism as a Chemical Agency: a Review of some of the Problems of Photosynthesis by Growing Plants."

AN unprecedented mining disaster occurred on March 10 at the Courrières colliery in the department of the Pas de Calais. An explosion of fire-damp resulted in the loss of more than 1100 lives. The causes of the explosion have not yet been fully established. The colliery employed 6998 persons, and possesses forty-four seams of coal; the annual output is about 2,000,000 tons. In 1890 attention was directed to this colliery by Sir C. Le Neve Foster on account of the remarkably low death-rate from falls of ground, and it was reported upon by a deputation of H.M. Inspectors of Mines. The average death-rate from

falls of ground per million tons of coal raised in the period 1890 to 1899 in Great Britain was 2·16, whilst at Courrières it was 0·39. The colliery was certainly admirably managed, and this fact makes it difficult to account for the terrible explosion, the immediate cause of which appears to have been an underground fire.

WEATHER of a very wintry type has been experienced this week over the British Islands, and in places the cold has been unusually severe for the time of year. On Sunday a large and important storm area arrived from the Atlantic, and in the course of the day its centre traversed Scotland. As the storm was approaching, strong westerly winds and gales, with heavy rains, were experienced generally. The storm developed considerable energy after reaching the North Sea, the barometer falling as low as 28·4 inches, and in the rear of the disturbance the wind greatly increased from the northward. Strong northerly gales accompanied by heavy squalls of snow or hail were experienced on Monday over nearly the entire country, and the storm occurring at the time of spring tides caused severe floods, especially along our east coast. The German and Dutch coasts have also suffered greatly. Sharp frost was experienced in Scotland and over the northern parts of England.

CANON TRISTRAM, F.R.S., whose death, at the age of eighty-three, took place on March 8, is believed to have been the first zoologist to make special application of the theory of natural selection. This he did in an article on the "Ornithology of Northern Africa," published in the then newly established journal the *Ibis* for October, 1859 (vol. i., pp. 429–433), and before the appearance of the "Origin of Species," grounding his belief solely on the papers communicated to the Linnean Society on July 1, 1858, by Messrs. Darwin and Wallace (Journ. Proc. Linn. Soc., iii., Zoology, pp. 45–62). "Writing," he said, "with a series of about 100 Larks of various species before me, I cannot help feeling convinced of the truth of the views set forth" in those communications. "It is hardly possible, I should think, to illustrate this theory better than by the Larks and Chats of North Africa." There is no room here to reproduce the next three pages, but they are worth reading now if only as recording an early and full acceptance of the Darwinian doctrine, and whether so much courage was shown by anyone elsewhere seems very doubtful.

MR. HALDANE, Secretary of State for War, in making the customary annual statement as to the policy of the Army in the current year, delivered a speech which has been received with much satisfaction in the scientific world. The need for clear thinking and for the application of the methods of science to the affairs of State was recognised frankly and emphasised repeatedly. Mr. Haldane's encouraging words to the military experts of to-day, his definition of the science of military organisation, and his description of a new school of young officers—as much men of science as engineers or chemists—should serve to inspire Army men with the spirit that must actuate successful practice. The Secretary for War assured the nation that our officers are becoming men with scientific training and reflective minds, and there is every hope they will soon work in connection with a thinking department such as that which took so prominent a part in securing the recent Japanese success. It is fortunate for this country that the Secretary for War believes in the application of scientific knowledge to military affairs, and we look forward to the time when this need for scientific thought will be recognised in every branch of the public service.

THE correspondence on the cause of the loss of the coal-tar colour industry, which is represented in Germany by a capital of 5,000,000*l*., with an annual value of about 50,000*l*., and the prospect of other industries passing out of our hands in the same way, continues in the columns of the *Times*. The writer whose article upon the jubilee of Dr. Perkin's discovery gave rise to the correspondence states in the issue of March 10 that in the early days of the coal-tar industry there were not a few accomplished chemists in England, but they could not find employment in the colour factories; and this being the case, the schools naturally felt discouraged in their efforts to produce men specially qualified for such work. "Our methods of policy," he remarks, "must be very different from those adopted in the past if we are to succeed; complete sympathy must be established between science and industry." The meaning and value of research have yet to be understood by the commercial community and the manufacturers of this country; and it is still necessary to impress upon the nation that scientific method is an essential factor of the development of industries. When there is a scientific laboratory in every works, the National Physical Laboratory will be able to take its proper place in a national scheme for the promotion of progress of applied science.

THE death of Mr. J. G. Goodchild removes a geologist and naturalist whose knowledge covered an unusually wide range, including ornithology, glacial geology, physical geology, and mineralogy, in all of which he did useful work, thanks to his thoroughness in testing generally accepted explanations, his independent originality, his keen insight, and his artistic skill. Mr. Goodchild served for more than thirty years on the staff of the Geological Survey, being especially engaged in Westmorland and Cumberland, of which counties he made a comprehensive study. While in London, in the winters, he was for some years a valued worker at Toynbee Hall, living beside it in a Whitechapel tenement, and devoting most of his evenings to the organisation of its science classes. For the past fifteen years he was in charge of the geological and mineralogical collections belonging to the Geological Survey in the Edinburgh Museum, and, in connection with his work there, he edited Heddle's "Mineralogy of Scotland," and prepared a careful monograph on the Scotch zeolites. He was also lecturer in mineralogy and geology at the Heriot Watt College. His most important scientific contribution was his paper on the glacial deposits of the Eden Valley, published by the Geological Society in 1875; it will doubtless rank as one of the classics of British glacial geology, though its influence suffered by its publication fifteen years before the original views there expressed could be correctly appreciated.

THE annual meeting of the Royal Society for the Protection of Birds will be held on March 20. The chair will be taken by the Marquess of Granby, G.C.B.

A REUTER message from Lahore, dated March 10, reports that a severe earthquake has occurred in Bashahr, one of the hill States.

THE Berlin correspondent of the *Times* states that Prof. Koch delivered an address on March 7 at the Kaiser Wilhelms Akademie, in the presence of the German Emperor, on the subject of his investigations into the causes and nature of the sleeping sickness in Uganda and East Africa. His studies, he stated, have entirely confirmed the results of the investigations of Dr. Castellani and Col. Bruce, and he has devoted his efforts in particular to investigating the habits of *Glossina palpalis*, the fly by which the infection is conveyed.

IT has been decided to found an International Association of Colonial Agronomy to promote the scientific study of the problems of colonial and tropical agriculture and of the commercial utilisation of natural products. The headquarters of the organisation will be in Paris. The project took shape at the last meeting of the French Association of Colonial Agriculture and Colonisation, when a provisional committee was appointed to organise the International Association, with M. de Lanessan as president and the following vice-presidents:—Great Britain is represented by Prof. Wyndham Dunstan, F.R.S.; Germany, by Prof. Warburg; Brazil, by M. de Piza, Brazilian Minister in Paris; Italy, by Count Sabini; Mexico, by M. de Mier; Holland, by Prof. Greshoff; Portugal, by Prof. Batalha Reis; while France is represented by M. Myre de Vilers, president of the French Geographical Society, Profs. Giard, Müntz, Prillieux and Roux, and MM. Henrique, Tisserand, M. Dybowski, of the French Colonial Office, and Prof. Heim. The first meeting of this committee of initiation will be held this month in Paris.

ON Tuesday next, March 20, Dr. J. E. Marr, F.R.S., will deliver the first of three lectures at the Royal Institution on "The Influence of Geology on Scenery." These are the Tyndall lectures; and on Thursday, March 29, Prof. Bertram Hopkinson will begin a course of three lectures on "Internal Combustion Engines," with experimental illustrations. The Friday evening discourse on March 23 will be delivered by Lord Roberts, on "Imperial Defence"; on March 30 by Prof. Zeeman, on "Recent Progress in Magneto Optics"; and on April 6 by Mr. W. B. Hardy, on "The Physical Basis of Life."

FROM the Egyptian Survey Department we have received a copy of a "Catalogue of the Geological Museum, Cairo," compiled by Dr. W. F. Hume.

IN part vi. of vol. xix. of the Proceedings of the Geologists' Association Mr. M. A. C. Hinton describes the horn-core of a ruminant from the Norwich Crag of Bramerton as representing a new species of gazelle, under the name of *Gazella daviesi*.

THE eyes of deep-sea animals form the subject of an instructive article, by Dr. O. Rabes, of Magdeburg, in the February number of *Himmel und Erde*. Special attention is directed to the strange larval fish recently obtained during the *Valdivia* expedition in the Antarctic, and also in deep water in the Indian Ocean, and described under the name of *Stylophthalmus paradoxus*. In this creature, the systematic position of which is uncertain, the eyes are mounted, crab-fashion, on stalks, the length of which apparently varies according to age.

THE modern practice of supplying hives of bees with new queens at comparatively short intervals renders it essential that a sufficient stock of queen-bees should always be available at a moderate cost to the hive-owner. In America it appears that there are establishments specially devoted to the rearing of queens for sale; but as the price charged is considerable, the entomological section of the Department of Agriculture has issued a Bulletin (No. 55) in which the author, Dr. E. F. Phillips, gives full instructions to enable the hive-owner to breed his own queens.

THE mode in which the American prongbuck, or "antelope," protects its young forms the subject of a beautifully illustrated article, by Mr. H. H. Cross, in the March number of the *Century Illustrated Magazine*. According to the author, the female prongbuck, when about to give birth to offspring, proceeds to the middle of one of the numerous patches of cactus occurring in the haunts of these animals, and there, by means of a series of bounds in the descent from which the cactuses are cut to pieces by her sharp hoofs, clears a space in the centre. Here the young are born, and remain for some time, secure from wolves, which are unable to penetrate the cactus-fence. Danger is, however, experienced from eagles, and to protect their young from these birds the antelope are stated to display great courage.

THE February issue of the *Quarterly Journal of Microscopical Science*, which completes the forty-ninth volume, contains five articles, all devoted to invertebrates, and all of a highly technical nature. The most generally interesting, perhaps, is one by Mr. D. H. Tennent on a cercarian parasite, *Bucephalus haimeanus*, infesting oysters in America, more especially those growing in brackish water. Mr. W. Woodland continues his investigations into the mode of formation of spicules, dealing in this instance with those of the Cucumariæ, and the "plate-and-anchor" type characteristic of Synapta. The maturation of unfertilised eggs of sawflies is discussed by Mr. L. Doncaster, while Prof. J. E. Duerden endeavours to explain the *rôle* of mucus in his favourite corals, and Mr. W. S. Perrin records observations on the structure and life-history of *Pleistophora periplanetae*, a sporozoan parasite of the cockroach.

MISS HARRIET RICHARDSON has prepared a "Monograph on the Isopods of North America," recently published as Bulletin No. 54 of the United States National Museum (pp. liii+727). This work contains careful analytical keys of the families, genera, and species, and a short descriptive account of each species illustrated by text figures of their essential systematic features. The author has evidently spared neither pains nor labour to make her monograph complete, with the result that it must be regarded as an essential part of the outfit of every zoologist who takes an interest in the systematic study of this group of animals.

TUBERCULOSIS in cattle, by Mr. John M. Scott, is the subject dealt with in Bulletin No. 55 of the New Mexico College of Agriculture. Tuberculosis is defined, the extent of the disease, symptoms, and modes of infection are described, and the use of tuberculin is detailed. The Bulletin is illustrated with five capital plates.

A SHORT part continuing the work of the late Mr. G. S. Jenman on the descriptions of West Indian and Guiana ferns has been published. This and future parts will be based on Mr. Jenman's manuscript, and it is anticipated that the work can be carried to completion. In this part the genus Lomaria, containing eight indigenous species, is described.

A DEPARTMENT of forestry has been instituted in connection with the South African College, Cape Town. Provision is being made for ten resident students at Tokai, where the arboretum, a forest museum, and other advantages will furnish excellent facilities for the practical work. The curriculum will consist of a preliminary scientific course in the first year, followed by a two years' forestry course.

A BULLETIN, No. 52, on the agathi plant, issued by the Department of Agriculture, Madras, deals with the cultivation of this plant, *Sesbania grandiflora*, as a support for the betel-vine, the leaves of which form one of the ingredients of the masticatory *pán-sopári*. The agathi plants are topped to prevent them growing too high; the branches

are fed to cattle or used as a green manure for the betel-vines, and the tender leaves and young pods are served as a curry.

IN the January number of the Bulletin of the Department of Agriculture, Jamaica, Mr. W. Harris refers the different varieties of yams cultivated in the island to four species, *Dioscorea sativa*, or negro yam; *Dioscorea alata*, or white yam; *Dioscorea cayennensis*, the yellow or afou yam; and *Dioscorea trifida*, the Indian yam or cush-cush. For the destruction of cotton worm and cassava caterpillar, where Paris green is likely to injure the foliage, or when it may be washed off by rain, Mr. W. Fawcett recommends a wash of lead arsenate.

THE committee entrusted by the Hawaiian Sugar Planters' Association with the control of the experiment station at Honolulu notifies in its report for the year ending September 30, 1905, that a division of pathology and physiology has been formed under the directorship of Dr. N. A. Cobb, in addition to the division of agriculture and chemistry and a division of entomology. The work of the last named has been chiefly devoted to the study and breeding of insects that prey upon cane leaf-hoppers. Among the bulletins prepared by the agricultural division, the most important presents a review of fertiliser experiments extending over eight years. A bulletin on the inspection and disinfection of cane cuttings is the first publication of the new department. The methods of preparing Bordeaux mixture are discussed, and suggestions are made for treating cuttings on a large scale.

IN the *Engineering and Mining Journal* (vol. lxxxi., No. 7) is the first authoritative statement of the discoveries in a new gold field at Manhattan, in Nevada, which is at present attracting much attention. The veins, which appear to be extraordinarily rich in gold, occur in limestone in the vicinity of rhyolite.

THE preliminary returns issued by the Home Office show that the production of coal in Great Britain in 1905 amounted to 236,111,150 tons, or 3,699,366 tons more than in 1904. The number of persons employed at mines under the Coal Mines Regulation Act was 858,373, or 1·28 per cent. more than in 1904. The production of copper ore was 7115 tons, that of lead ore 27,482 tons, and that of zinc ore 23,647 tons. Statistics of the production from open workings are not yet available, so that details of the production of other minerals are incomplete.

IN a paper on the screw propeller controversy published in the Transactions of the Institution of Engineers and Shipbuilders in Scotland (vol. xlix., part iv.), Mr. James Holden endeavours to demonstrate the true action of the propeller, and to show that Rankine's theory is wholly erroneous. He considers that none of those writers who have adopted the Rankine theory, in whole or in part, are able to guide others, either scientifically or practically, in the construction or use of screw propellers.

THE latest addition to technical periodical literature is a bi-monthly journal entitled *Concrete and Constructional Engineering*. It has been founded with the object of meeting the growing demand for information regarding concrete and reinforced concrete. The first issue (March) covers 74 octavo pages, and is admirably illustrated. It contains articles by Lieut.-Colonel J. Winn, on the advent of the concrete age; by Mr. W. N. Twelvetrees, on steel skeleton construction; by Mr. C. F. Marsh, on reinforced concrete foundations of buildings; by Mr. C. H. Desch, on the setting of Portland cement; by Mr. B. H. Thwaite, on the preservation of iron and steel against corrosion; and a digest of recent publications on concrete and constructional engineering.

IN the Journal of the Franklin Institute of Philadelphia (vol. clxi., No. 2) Mr. E. Keller describes and illustrates a number of improved methods and apparatus introduced in the newly equipped assay laboratory of the Anaconda Copper Mining Co. in Baltimore. The chief duty of the laboratory is to determine the values of copper, silver, and gold in crude copper, and the equipment is probably superior to any elsewhere. Stirring and filtering are effected by machines, and in assaying operations everything is handled in sets. Much labour has been saved, breakage of expensive glass-ware has been very largely eliminated, and the time of the furnace work and the consumption of gas have been much reduced.

THE modern locomotive question is chiefly one of boilers. The great increase in the size of boilers and in the pressures carried, which has taken place during the past few years, has necessitated the re-consideration of the principles of design, which had been settled with comparatively small boilers carrying low pressures. The paper on large locomotive boilers read by Mr. G. J. Churchward before the Institution of Mechanical Engineers on February 16 is therefore opportune. He gives illustrations of various locomotive boilers, and shows how much more heating surface is now provided for a given area of cylinder than was formerly considered necessary. The higher pressures now common have undoubtedly produced much more efficient locomotives, both in respect of hauling power and of coal consumption. The improvement has been very marked with every increment of pressure right up to 227 lb. carried by the new De Glehn compound locomotives of the Great Western Railway.

THE report of the superintendent of the Meteorological Department of Ceylon for the year 1904 shows that 1904 must be reckoned as one of the "dry" years; the rainfall was considerably below the average over the greater portion of the island, especially in the north and west, where deficiencies of 10 to 15 inches were recorded in several districts. In May, however, the excess of rainfall caused destructive floods; in the Kelani Valley alone 124 square miles were covered, involving great loss of property, the water being higher than at any time since 1871. The climate varies considerably in different parts of the island; in the lowlands it is tropical, but in the high parts of the interior it is equal to that of many parts of Europe. The highest shade temperature recorded in 1904 was 99°·8 at Anuradhapura, in May, and the lowest, 28°·2, at Nuwara Eliya, in February; this is the lowest reading on record. Temperatures exceeding 100° have been recorded in some years; the highest on record was 103°·7, at Trincomalee, in May, 1890.

IN the February number of the *Bulletin de la Société astronomique de France* MM. Flammarion and Loisel publish the annual summary of the climatology of 1905 as recorded at the Juvisy Observatory. It appears that a notable feature of the atmospheric pressure was its extraordinary irregularity. With the exception of February, March, and July, the mean monthly temperatures were below the normal. October was the coldest recorded in the neighbourhood of Paris since 1757, excepting the October of 1887. In discussing the solar-radiation record, attention is directed to the abnormal cloudiness of 1905 and to its coincidence, in regard to time, with the large number of sun-spots. The writers suggest that the

abnormal rainfall was caused by increased evaporation taking place in the tropics, and connect this, and the cyclones, earthquakes, and volcanic eruptions which took place during the year, with the increased solar activity.

MESSRS. LANDER AND SMITH, of Canterbury, have sent us their catalogue of new meteorological instruments. Mr. Lander has given much attention to the problem of providing satisfactory self-recording instruments at popular prices, and has devised new forms of apparatus for registering wind-force and direction, rainfall, sunshine, air pressure, temperature, and humidity. The advantages of using instruments which will give a continuous record are obvious; the desideratum is, of course, that they shall give trustworthy records. The anemometer appears to be a modification of the well known Dines's pressure tube anemometer, with the addition of an arrangement for recording upon a separate paper the direction of the wind as well as its force. The sunshine recorder is of the photographic type, but, unlike other photographic recorders, it makes use of a clock for controlling the admission of the light, so that the record is for mean time instead of for local apparent time as in all other forms. As an example of the efficient working of the different apparatus, Mr. Lander has sent us some reduced curves, here reproduced, of the sharp and sudden thunderstorm of February 8. They clearly show an abrupt drop in the maximum force of the wind from about forty miles an hour to almost a calm, and an equally sudden shift in direction from W.S.W. to N.W. The barometer, which had been falling steadily all day, rose abruptly a tenth of an inch, with a simultaneous drop of 12° in temperature and a fall of rain (or snow) of about a quarter of an inch in a few minutes. During the storm no less than six windmills were struck by lightning near Canterbury, where the records were obtained.

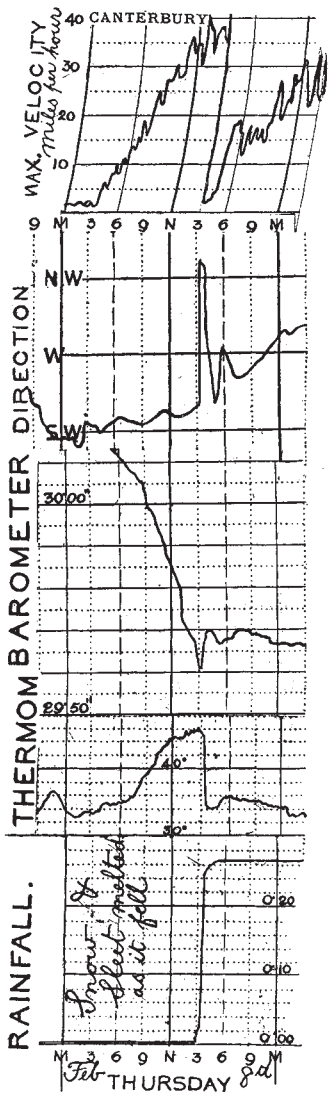

FIG. 1.—Reduced copies of records from self-recording instruments, February 8.

UNDER the title of "An American Laboratory for Experimental Phonetics in Germany," Major H. vom Hagen describes the experiments carried out with the aid of the Carnegie Institution by Prof. E. W. Scripture, first in Munich and later on in Berlin. The paper is illustrated by tracings of phonographic records, and is published in *Prometheus*.

IN the Bulletin of the French Physical Society, No. 235, it is stated that M. Ernest Bichat, who died towards the end of last year, was the author of a number of papers on magnetic rotatory polarisation in gases, and in conjunction with M. Blondlot on oscillating discharges, on Kerr's phenomenon, and on the cylindrical absolute electrometer. He was dean of the faculty of science at Nancy.

A PORTRAIT of Prof. Georg Cantor, of Halle, is published in the January number of the *American Journal of Mathematics*. Cantor's researches on the theory of multitudes and the continuum earned for him the Royal Society's Sylvester medal in 1904, and, speaking of this theory, Dr. Pittard Bullock writes:—"Herr Georg Cantor is looked upon as the discoverer and creator, and in rare cases has a discovery been attributed to one man alone with more readiness." We extract this quotation from a thesis on "The Power of the Continuum." In this thesis Dr. Pittard Bullock gives a proof that the power of the continuum is the lowest but one, or, in other words, that there is no multitude the power of which is lower than that of the continuum but greater than that of a dinumerable multitude.

TWO papers on the vibrations and stresses in shafting have recently appeared. One, forming the fourth of the technical series of the Drapers' Company Research Memoirs, is based on a paper written by Prof. Karl Pearson in 1885, and deals with torsional vibrations treated by Saint Venant's methods; it is illustrated by a large number of lithographed diagrams. The other is a reprint from the Minutes of Proceedings of the Institution of Civil Engineers of a joint paper by Dr. Chree, F.R.S., Captain H. R. Sankey, and Mr. W. E. W. Millington, dealing in the main with the dangers arising from synchronism between the periods of free vibration of the loaded shaft and the periods of fluctuation of the force or torque applied to it. In a large class of practical applications we have to deal with shafts carrying such loads as flywheels, where the kinetic energy of the shaft itself can be neglected, for purposes of rough calculation, in comparison with that of the loads.

IN a paper on the future of statistics, published in the *Statistical Journal* (lxviii., 4), Mr. J. G. Mandello directs attention, among other matters, to the need of organisation in the publication of statistics. The paper deals, in a large measure, with the tendency to chaos resulting from the ever increasing production of printed literature on statistics. It is becoming more and more difficult as time goes on for a busy man to obtain the information which he requires as to the actual state of knowledge in any branch of statistical science, and the mere consulting of voluminous masses of literature more often than not fails to give the inquirer the information which he requires, and, indeed, is not unlikely to end in the re-publication of work already done. Mr. Mandello's remedy is to limit the output of printed matter, and to devote the money thus saved to the establishment of central bureaux where papers of a highly specialised character could be conserved, in type-written form, for the use of future inquirers, a staff of officials being appointed for the purpose of giving the necessary assistance. A plan of this kind is already working in connection with the Geological Survey of Belgium. Instead of printing maps, which soon become

superseded, they keep large manuscript maps on which the newest details are at once entered, and any specialist can obtain on application a drawn copy of the map of any region, which is naturally quite correct and up to date. A side-issue, which the author does not consider, is whether people would rush into archives with the same eagerness with which they now rush into print, and whether it might be better if they did not.

THE great alteration which occurs in the fluorescence spectrum of sodium vapour when the wave-length of the exciting light is changed is the subject of a brief communication by Prof. R. W. Wood in No. 4 of the *Physikalische Zeitschrift*. Three kinds of monochromatic light, having wave-lengths 5085, 4799, and 4676 respectively, and generated by a cadmium arc lamp of the Heraeus type, were employed in the experiments.

THE lecture delivered by Prof. Emil Fischer before the German Chemical Society on January 6, and having for its subject his recent researches on amino-acids, polypeptides, and the proteids, is published in the current number of the *Berichte* (No. 3). The lecture covers an extraordinarily wide field, and contains a *résumé* of the experimental results obtained during the past five years by Prof. Fischer and his colleagues. A briefer and more general summary of recent work tending towards the synthesis of proteid material is contributed by Prof. Maillard to the *Revue générale des Sciences* for February 15.

IN the Proceedings of the American Academy of Arts and Sciences (vol. xli., No. 19) Messrs. Gilbert N. Lewis and Plumer Wheeler have studied the electrical conductivity of solutions of potassium iodide in liquid iodine. Such solutions are found to conduct electricity as well as the best aqueous solutions, but they present certain interesting anomalies. In dilute solution the molecular conductivity increases linearly with the concentration, rising to a maximum and then falling as the concentration increases; the phenomena show a certain analogy with the deviations from Ostwald's dilution law in aqueous solutions. The temperature coefficient of conductivity is, moreover, negative for dilute solutions, but with increasing concentration it passes through zero and becomes positive.

ALTHOUGH several attempts have been made to prepare selenium iron alums of the type

$$Fe_2(SeO_4)_3,M_2SeO_4,24H_2O,$$

no compound of this group has yet been obtained. In the February number of the *Gazzetta* Dr. Cesare Roncagliolo describes the method by which he has succeeded in preparing the rubidium and cæsium salts,

$$Fe_2(SeO_4)_3,RbSeO_4,24H_2O, \quad Fe_2(SeO_4)_3,CsSeO_4,24H_2O.$$

As anticipated, these salts were found to be isomorphous with the ordinary alums. As the rubidium and cæsium salts melt at about 40° C. and 55° C. respectively, it may be inferred by analogy with the other alums that the corresponding potassium and sodium alums melt below 0° C. If this is the case, an explanation is afforded of the failure hitherto experienced to prepare these salts.

A SIXPENNY edition of Lord Avebury's "Beauties of Nature and the Wonders of the World we Live in" has been published by Messrs. Macmillan and Co., Ltd.

MESSRS. PERCIVAL MARSHALL AND CO. have published, at 3*d*. net, a pamphlet by Mr. A. H. Stanley dealing with "Patents to Inventors." A chapter on patent agents is included.

MESSRS. ARCHIBALD CONSTABLE AND CO., LTD., have published a second edition of Mr. Bertram Blount's "Practical Electro-chemistry," the first issue of which was reviewed at length in NATURE of April 18, 1901 (vol. lxiii., No. 1642). The present edition has been revised and brought up to date. The revision of the section on organic electrochemistry has been done with the assistance of Dr. Mollwo Perkin.

THE twenty-first session of the London Geological Field Class, conducted by Prof. H. G. Seeley, F.R.S., will be opened on Saturday, April 28, by an excursion from Nutfield to Redhill, for the observation of parallel escarpments. In addition to the Saturday afternoon excursions, vacation visits extending over two or three days will be made with the view of examining a Tertiary locality in the Hampshire basin, the Cretaceous rocks of north-west Norfolk, Devizes, or Folkestone; the oolites of Swindon or Cheltenham; and the primary rocks of Clifton, the Mendip Hills, the Welsh border, or Leicestershire. The secretary of the class is Mr. J. W. Jarvis, St. Mark's College, Chelsea, S.W.

A COPY of the report of the Felsted School Scientific Society for the year 1905 has been received. The organisation of the members of the society into four sections has now been in working order for two years, and has led to sound collective work, and in some cases originated good individual practical study. Special encouragement is given to the individual efforts of members. Like most similar organisations, this society is greatly in need of funds to supply necessary instruments, specimens, and apparatus to carry out the observations and other work planned by the directors. Men of science could encourage the voluntary study of science in secondary schools by presenting duplicate specimens and unused instruments to school scientific societies. The report shows that a sustained effort is being made at Felsted School to create active interest in the study of science.

MESSRS. ISENTHAL AND CO. have just issued new catalogues dealing respectively with mercury vapour lamps for all purposes, and with electric heating and cooking appliances. The mercury vapour lamps are at present made in three standard lengths of 18 inches, 26 inches, and 38 inches, so as to utilise fully the various standard voltages from 100 volts to 250 volts. At present the lamps are available only for direct current, though they are recommended for use on alternating current in connection with the Grisson rectifier and electrolytic condenser. The catalogue of heating and cooking apparatus is excellently illustrated, and is divided into two sections. The first includes appliances for domestic purposes and use in hotels and clubs, while the second is concerned with technical apparatus for use in factories and laboratories.

OUR ASTRONOMICAL COLUMN.

COMET 1905*c*.—Giacobini's comet (1905*c*) has now become much fainter, but does not set until some 3½ hours after sunset. A further instalment of Herr Wedemeyer's ephemeris is given below:—

Ephemeris 12h. M.T. Berlin.

1906	α (true) h. m. s.	(δ true) ° ′	log *r*	log Δ	Brightness
Mar. 16 ...	2 45 1 ...	1 49 ...	0·1371 ...	0·2718 ...	0·51
19 ...	2 54 0 ...	2 59			
22 ...	3 2 28 ...	4 5 ...	0·1714 ...	0·3058 ...	0·37
25 ...	3 10 28 ...	5 5			
28 ...	3 18 6 ...	6 1 ...	0·2022 ...	0·3375 ...	0·28
31 ...	3 25 21 ...	6 53			

As will be seen from the ephemeris, the comet is still traversing the constellation Cetus towards Taurus, and